

K-12

E D U C A T I O N

K-12 Education Overview

By Dan Pullen

Can you imagine what our lives would be like if we all had the opportunity to grow up in the twenty-first century? We have all heard stories from our parents or grandparents such as, “I had to walk five miles to school in three feet of snow,” or “We had to warm our ink by the coal-burning stove before we could have our penmanship lessons.” These may be exaggerations from decades past, but they make good stories. What kind of stories will today’s children tell about growing up in North Dakota, and the experiences they take from schools today?

“Mom, I toured NASA today and I want to work in the space program!” Virtual field trips now make this and other trips possible — with the leadership of our teachers, a staff guide presenting at the actual location, and technology to make it a reality. Schools are now using online tours and field trips as important additions to in-school learning resources. How many children, and even adults, will ever be able to travel to NASA, the Holocaust Museum or the Smithsonian? The truth is, most children will never have the opportunity to travel to national and international sites and learn firsthand, but with a little ingenuity and high-quality technology systems, we can travel and visit and learn without leaving the local classroom.

“I learned five new Spanish ‘palabras’ from kids in another class, but they are part of my class too!” With the technology we have right now in North Dakota schools, students are learning new “words” through video networking, learning from qualified teachers, and learning with students in other locations. Because of distance education systems like ours, students can now take advanced math courses, foreign languages, and other courses that might not otherwise be available because of the school’s location. Now each child can receive an equal education with equal opportunities. Schools can offer an expanded curriculum and high-quality instruction, even as student numbers decrease and the teacher shortage continues.

“Dad checked my test scores on our computer at home last night!” With the implementation of PowerSchool in many North Dakota schools, parents can now interact with children’s



schoolwork and teachers without interrupting daily activities and schedules. PowerSchool allows parents to check grades, view attendance records, learn class schedules and more — all in a secure environment over the Internet. In the end, parents can become more active in their children’s schooling and have the information they need to work more closely with teachers to guide and reinforce student learning, plus have more time with their children to pursue other family activities.

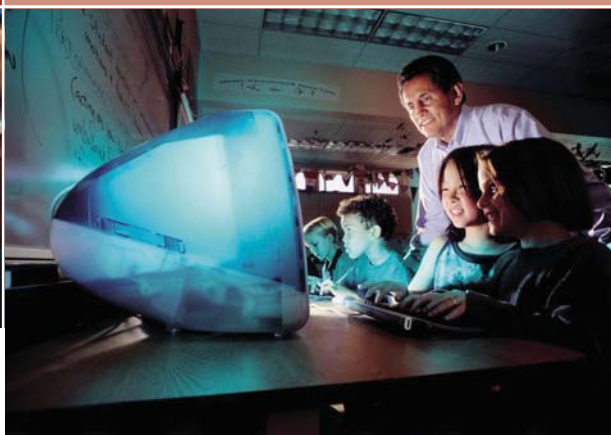
The opportunities our children have today are far beyond those of our parents and grandparents. And they have improved avenues of learning because the state of North Dakota is truly a leader in education technology, and cares about the advancement of our youth. We need to have more NASA tours, learn more “palabras” through video networking, and continue to upgrade the technology systems we have already implemented ... in order to advance into a brighter tomorrow with even more opportunities for students to excel.

With better learning tools in our schools today, we will build a better future for our children and grandchildren.

Dan Pullen
ND Director of K-12 Technology

GOAL ONE

Provide leadership and coordination of K-12 technology services to improve educational opportunities in North Dakota.



STRATEGIES

- Expand the leadership role of the North Dakota Education Telecommunication Council (ETC).
- Evaluate the effectiveness of technology use in K-12 schools through a systematic assessment process.
- Identify additional web-based applications that meet K-12 customer needs, which can be deployed statewide to create efficiencies.
- Support the operation of Prairie School Television.
- Ongoing strategies.

Leadership and coordination of K-12 technology services are essential elements in enhancing educational opportunities across North Dakota.

The role of the North Dakota Education Telecommunication Council (ETC) will continue to grow in the coming years as it becomes recognized as the coordinating body for statewide technology initiatives. The merger and reorganization of the Center for Innovation in Instruction (CII) and Sendit Technology Services (STS) into EduTech will be completed and a single EduTech budget will be submitted for funding by the 2003 legislative session. The ETC will research the benefits of common hardware and software configurations for key K-12 local area network and desktop applications, and take on the responsibility of approving all school technology plans for state and federal purposes. In addition, the ETC will work closely with the North Dakota Department of Public Instruction (DPI) and other state agencies on coordination of educational technology and information technology systems for K-12 schools.

To evaluate the effectiveness of technology integration, a school technology assessment has been deployed to gather data on the use of educational technology in a school district. As of September 2002, four North Dakota school districts had conducted comprehensive technology assessments. The assessment process was developed over the last three years by EduTech staff in conjunction with the North Central Regional Technology in Education Consortium in Illinois. The process includes surveys of

teachers, administrators, students and parents; onsite interviews and observations by external evaluators, and evaluation of student work. EduTech will provide incentives to four or five North Dakota schools in 2002-2003 to complete a comprehensive technology assessment process. Five to six schools per year will participate in the technology assessment process as part of their school improvement work or as part of an evaluation of federally funded technology projects.

Based on the successful rollout of PowerSchool, a student information system, other high-need applications will be identified and pilot projects conducted to discover those network-based applications that can be efficiently implemented on a statewide basis. The North Dakota Information Technology Department, along with other vendors, will be evaluated as the statewide application service providers. Results will include increased effectiveness for K-12 schools and cost-savings statewide. Schools using the new services will pay the ongoing costs.

Based on successful implementation of Prairie School Television (PST) programming as a free service to North Dakota schools, the North Dakota ETC will seek continued funding to support its operation to help it expand in scope and usefulness to schools.

As in the past, the North Dakota ETC will continue to support the expanded use of technology in schools through a program of grants that focuses on high priority needs. Requiring districts to provide matching funds will continue to be part of the ETC grant programs.

“Assessing the impact of technology on student learning is a difficult but critical component of technology planning.”



GOAL TWO

Coordinate the efficient and effective use of technology systems to enhance educational opportunities on a statewide basis.

STRATEGIES

- Connect every school district to ND STAGEnet.
- Implement a statewide “web meeting” application to facilitate K-12 needs for a widespread communication involving dozens of end-points.
- Implement K-12 educational projects in cooperation with the North Dakota University System (NDUS), using Internet2 capabilities such as virtual field trips.
- Expand the implementation of PowerSchool to every school district that wants to use it as a student information system.
- Develop and implement a plan for the North Dakota Division of Independent Study to be completely self-supporting by 2010.
- Ongoing strategies.

Cost-effective, affordable solutions are necessary if every student in North Dakota is to receive the educational opportunities required to prepare them for the 21st century. Technology, coordinated on a statewide basis, plays an important role in providing these opportunities.

This coordination includes the implementation of STAGEnet, a statewide broadband network, one of the state’s most notable achievements. STAGEnet makes possible educational programs such as interactive video classes, web-based research by students, and the development and delivery of course materials by teachers in all subject areas. STAGEnet makes distance-learning opportunities available so that geographical location is no longer a barrier. Currently, STAGEnet provides high-speed broadband connections to every public high school district in North Dakota, plus 25 K-8 districts. The remaining 16 K-8 and rural districts will be evaluated in 2003 and connected to STAGEnet when it is practical and cost-effective.

STAGEnet will be the vehicle for implementing web-based meetings as a cost-effective solution for connecting people throughout the state. Web meeting technologies make it possible to communicate effectively with dozens of end-points on an ad-hoc basis, something not practical using standard videoconferencing technologies. Meetings and in-service sessions of EduTech, the North Dakota Association of Technology Leaders and the Department of Public Instruction are potential initial users.

The implementation of educational projects such as Internet2 provide potential for K-12 teachers and students to participate in new educational experiences that require higher capacity than the traditional Internet. Examples include access to specialized research equipment and worldwide multipoint videoconferencing. Participation in Internet2 by North Dakota K-12 schools requires the cooperative efforts of the North Dakota Education Telecommunication Council (ETC), the North Dakota Information Technology Department (ITD), the North Dakota University System (NDUS), and EduTech.

PowerSchool is another promising program that provides a cost-effective, reliable, state-of-the art student information system to help schools manage student information, collect data and report information to state and federal agencies. PowerSchool allows teachers and administrators to manage student records online with ease, with automated tasks including attendance, grades and class scheduling. It is operated on a centralized basis by ITD with access through the state network. By October of 2003, up to 30 school districts will be using PowerSchool as their student information system. Based on initial success, it is expected that an additional 50 schools may implement PowerSchool.

The North Dakota Division of Independent Study (NDIS) will continue to play a critical role in delivering distance education to students in North Dakota and throughout the United States. The director and staff of NDIS in consultation with the director of the ETC, will develop a plan to make NDIS self-supporting by 2010. This will eliminate the need for the general fund appropriation that NDIS now relies on to cover about 17 percent of its total budget.

The ETC will continue to improve its organizational structure and operation as a governance board, and continue to fund the director's position to fulfill the mission of the ETC in coordinating educational technology programs. ETC's ongoing coordination efforts will include leading the state's E-rate application filing and state educational technology planning processes. The newly reorganized EduTech will continue to provide schools with cost effective information technology services such as e-mail, web hosting and a help desk. It will also coordinate state buys of educational software and support statewide applications such as BlackBoard for enhancing face-to-face instruction and video delivered instruction, and as a stand-alone delivery method for completely web-based courses.



"ITD deployed a system called PowerSchool, where teachers can track attendance and keep virtual grade books. Parents can even check their children's schoolwork ... from the privacy of their homes."

GOAL THREE

Provide distance education systems to deliver a comprehensive curriculum to North Dakota students.

STRATEGIES

- Support the implementation of video networking in schools that need video to share courses.
- Develop a distance education clearinghouse site for K-12 high school and dual-credit courses.
- Support the implementation of video networking capabilities in at least one site in every North Dakota school district.
- Implement video networking capabilities and strategies to connect K-12 schools to educational resources outside of the state.
- Develop educational resources and activities based on the Lewis and Clark theme in cooperation with other state agencies.
- Ongoing strategies.



All students in North Dakota should have access to a comprehensive curriculum regardless of their geographic location or school size.

With the implementation and continued support of interactive video networking, students have the opportunity to take courses that might not be offered within their own schools. This technology is especially important for rural students, because they can share classes with their regional neighbors, and not be limited because of teacher shortages or unqualified instructors.

Students from any location can take higher-level courses such as advanced math, specialized sciences and language courses, even courses for college credit, not available within their own schools.

With the increasing number of high school, advanced placement and dual-credit courses available online, a statewide web-based clearinghouse of K-12 course offerings will be developed in 2003. All schools that have courses available for use by students outside of their video consortiums will post those

“Students can ‘travel’ to museums, interpretive centers and national education resources such as NASA, and learn the same content as if they had toured the actual facility.”



offerings with course and contact information available to others who may be interested.

While North Dakota is convinced that students deserve curriculum opportunities, funding for video networking can be a challenge. Although state and federal grant funds provided grants of up to \$20,000 in support to North Dakota schools in 2002 for implementing video networking capabilities, not all schools that applied for grants were able to be funded. Twenty schools with no current videoconferencing capabilities will be funded to support implementation of video in 2003. An additional 25 schools will be funded by Education Telecommunication Council grants to add Internet Protocol (IP) video capabilities to existing video networks. Over 90 video network sites are already operating statewide, and with 35 or 40 additional sites to be added in the near future, every school district in the state will have the ability to communicate and interact through video networking.

The sharing of high school courses isn't the only benefit of video networking. Video is becoming an important tool for administrative meetings, statewide professional development and intra-consortium planning. To ensure that all schools have capabilities to use video for these purposes, 35 sites will be funded for adding IP video conferencing capabilities in 2003.

Another important capability of video networking is the connection of K-12 schools to educational resources outside of the state, such as “virtual field trips.” In order to implement the use of these resources by K-12 teachers and students, new policies and procedures must be developed by the North Dakota Interactive Video Network (IVN) and ITD. Training of school video coordinators and teachers will be necessary to ensure appropriate use and success.

Students can also take an expedition in their own classrooms with the Lewis and Clark Resource Collection. Additional state funding has been requested to enhance this collection. With this collection, teachers bring the history of the expedition to their classrooms using technology-based learning materials that focus on Lewis and Clark as a common theme across the curriculum, including the core subjects and North Dakota history, cultural perspectives and the arts.

The North Dakota Division of Independent Study will continue to expand distance education opportunities for students through traditional, web-based and video delivery of courses for middle- and high-school students. EduTech will provide ongoing support for video consortiums that share courses and other resources using video networking, and continue supporting the use of web course development and delivery tools for K-12 teachers.



G O A L F O U R

Increase professional development opportunities for North Dakota school staff to ensure students have adequate technology instruction.



S T R A T E G I E S

- Implement the use of interactive video networking and web delivery for professional development opportunities for K-12 educators.
- Ongoing strategies.

In order for students to excel in a high-tech environment, educators must be trained to use technology and feel comfortable with it before they can incorporate it in their courses. Additionally, technology support staff must have the training they need to keep networks and systems operational.

Interactive video networking is an excellent way for school administrators, technology coordinators, teachers and board members to receive training and instruction. High-speed networks allow school representatives to meet with individuals in other locations to hold meetings, discuss information and technology, and provide learning sessions. With the continued development and support of video networking, school systems will reduce travel expenses and time away from the classroom.

Another opportunity for professional development is web delivery. Much like video networking, web delivery is convenient for teachers and administrators because they can connect to the Internet from any location and receive training at their convenience.

Professional development opportunities developed by EduTech will continue to be delivered to schools by the EduTech lead staff and regional support personnel. Training for administrators, technology coordinators and distance education teachers will continue to be focused on applications to engage all educators in practices that allow them to be more efficient and effective in classroom management and instruction. Teacher training will include both basic technology skills and advanced curriculum integration sessions based on authentic classroom activities.

Technology can eliminate distance barriers for North Dakota educators and enable them to learn and instruct — worldwide. EduTech will continue to develop and deliver new professional development opportunities for North Dakota educators using video networking and web delivery. Because of the progress our state has already made, a variety of opportunities provide flexibility for educators in terms of time, place and frequency of training opportunities.

“Interactive video networking has created enormous opportunities and potential for citizens across North Dakota. Already, the impact of video conferencing has left lasting impressions on high school and college students, adult learners, and public sector employees.”



“It is essential that our teachers have the necessary skills and tools to integrate technology into the curriculum and use new methods of delivery.”



GOAL FIVE

Develop and administer security policies to sustain the stability and integrity of the educational technology systems.



STRATEGIES

- Implement statewide virus protection in every K-12 school connected to STAGEnet to ensure the stability of the shared infrastructure.
- Ongoing strategies.

As our educational system becomes more dependent on technology, the reliability and integrity of the information systems and the underlying network are essential. These assets must be protected by implementing measures for the secure transmission, storage and processing of information.

Implementing virus protection in every K-12 school connected to STAGEnet is a first step in protecting critical systems. The number of computers protected through the statewide anti-virus contract must be increased. EduTech will budget for the contract and maintain the required hardware and software to provide this service on a statewide basis. Schools not participating in the anti-virus plan administered by EduTech will certify to EduTech that they have their own virus protection plan that meets EduTech standards.

Security awareness training for school leaders and others will be considered as a way to promote best practices for protecting information systems. We must continue to educate and disseminate up-to-date information to leaders who can evaluate the effectiveness of current protection measures and make necessary improvements.

The North Dakota Education Telecommunication Council (ETC) will continue to update its policies and practices in order to ensure technology systems are reliable for K-12 mission-critical functions. EduTech will continue to work with the North Dakota Information Technology Department (ITD) on issues of risk management and security of network-based resources made available to schools. EduTech will continue to support statewide Internet filtering for K-12 schools to ensure Children's Internet Protection Act compliance for local and state E-rate applications and to ensure the filtering system meets the needs of K-12 educators and students. Because Internet filtering is required by most federal programs and is also an important instructional management tool for schools, a statewide Internet filtering system will continue to be maintained as part of each school's connectivity to STAGEnet. EduTech will continue to manage the filtering system for all schools statewide. Help desk services will continue to be coordinated with ITD and the North Dakota Interactive Video Network (IVN) in order to ensure seamless coverage across the variety of technology systems now in place.

"To date, over 25,000 computers are protected by the anti-virus software plan managed by EduTech."

